

General Information	
Name: Tina Teacher	District/School or Organization:
Subject Area/Topic: Math – Factoring	Grade Level(s): 3-5

**Part 1 – List the appropriate standards (State or National Standards for Content, Technology or 21<sup>st</sup> Century Skills) and one or more Thinkfinity learning object(s) aligned to the standards.**

State or National Standards	Name of learning object(s) / URL(s)
<b><u>NCTM Standards</u></b> Understand meanings of operations and how they relate to one another  Compute fluently and make reasonable estimates	Factor Game <a href="http://illuminations.nctm.org/ActivityDetail.aspx?ID=12">http://illuminations.nctm.org/ActivityDetail.aspx?ID=12</a>

**Part 2 – Determine instructional elements - *Integration***

A. Which type of Thinkfinity learning object is this?	B. Where will I use this learning object in the instructional cycle?	C. Which instructional strategies will I employ?
Learning Object for Teacher Use <input checked="" type="checkbox"/> Online (requires a computer) <input type="checkbox"/> Offline (no computer required)  Learning Object for Student Use <input checked="" type="checkbox"/> Online (requires a computer) <input type="checkbox"/> Offline (no computer required)	<input type="checkbox"/> Opening Motivational Activity <input checked="" type="checkbox"/> Central Focus of Lesson Plan <input type="checkbox"/> Research Tool for Students <input type="checkbox"/> Closure Activity <input type="checkbox"/> Assessment Tool <input type="checkbox"/> Remediation Tool <input type="checkbox"/> Enrichment Tool	<input type="checkbox"/> Direct instruction <input type="checkbox"/> Indirect instruction <input checked="" type="checkbox"/> Experiential learning <input type="checkbox"/> Independent study <input type="checkbox"/> Interactive instruction <input type="checkbox"/> Other  Notes: Visit <a href="http://olc.spsd.sk.ca/DE/PD/instr/index.html">http://olc.spsd.sk.ca/DE/PD/instr/index.html</a> for more information on the instructional strategies listed.
Notes:  Groups of students will solve a problem, by coming up with strategies for winning the game.		

**Part 3 – Plan for student success - *Implementation***

A. How will I configure my classroom for the learning activity?	
<b>Classroom Configuration:</b> <input type="checkbox"/> Computers not needed - printable resource <input checked="" type="checkbox"/> Whole group instruction, using a projector and / or interactive white board <input type="checkbox"/> Whole group activity, with small groups using mobile laptops simultaneously <input checked="" type="checkbox"/> Small group, using classroom computers or mobile laptops as rotating stations <input type="checkbox"/> One to one, using classroom computers or mobile laptops as rotating stations <input type="checkbox"/> One to one, in a computer lab setting <input type="checkbox"/> One to one, with individual student laptops <input type="checkbox"/> Other	Notes:  The mobile laptop cart has 15 computers. I will only need 10 computers to put students in groups of 3.  Projector needed to model the activity.

B. How will I manage implementation?	
<b>Classroom Management:</b> <input type="checkbox"/> General computer rules / procedures <input checked="" type="checkbox"/> Specific directions for activity <input type="checkbox"/> Helping Hands <input type="checkbox"/> Other	Notes: I will create a direction sheet for students to follow, so it is clear that each student will have a chance to observe, and 2 turns to play the game. This sheet will also have the guiding questions listed on it.

C. What additional considerations will support successful implementation?	
<input type="checkbox"/> Software <input type="checkbox"/> Hardware <input type="checkbox"/> Supplemental Materials <input checked="" type="checkbox"/> Other	Notes: Wireless Internet connection

#### Part 4 – Develop the student learning activity

A. Describe the learning activity. What will students be asked to do with the Thinkfinity learning object(s)? Students will get in groups of 3 to play the game. 2 students will play against one another, while the 3 <sup>rd</sup> student observes the strategies used by the players. The following questions will guide the observation: <ul style="list-style-type: none"> <li>• Give an example of something that one of the players did, that you would consider a “good move”? Explain.</li> <li>• Give an example of something that one of the players did, that you would consider a “bad move”? Explain.</li> <li>• In your opinion, what is the best 1<sup>st</sup> move of the game? Why is it the best move?</li> <li>• Do you think that someone playing the game for a second time would have a better chance of winning, than someone who is playing the game for the first time? Why?</li> </ul> <p>Students will play 3 games, rotating positions so that each student gets a turn to observe. After all 3 games have been played, the 3 students will discuss the guiding observation questions.</p>
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B. Describe how the learning activity will address students' individual needs – <i>Differentiation</i> <ul style="list-style-type: none"> <li>• The Factor Game has 3 different levels, a board with 30, 49, or 100 as the highest number to factor. Students who need more of a challenge can play at a higher level.</li> <li>• Students who need extra support may use a multiplication chart during the game.</li> <li>• Different learning styles are addressed – students play the game (concrete experience) and observe others playing the game (reflective observation).</li> </ul>
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C. Effectiveness – What indicators can you expect to see / hear from students that will inform you about the effectiveness of the learning activity? As students are playing the game, I will circulate around the classroom, observing students playing the game, and discussing the questions with groups. I will look for students playing the game to strategically choose numbers based on the factors that are left on the game board during that turn. I will also look for students to choose all of the factors for the number chosen, indicating automaticity with multiplication facts. I will listen for students to describe the winning strategy – picking the number on the board that has the largest difference between itself and the sum of the factors that are left on the board.
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#### Part 5 – Do a complete trial run of the learning activity you described in step 3D.

Reflect on the learning activity. Considerations: <ul style="list-style-type: none"> <li>• It took me about 5 minutes to play one game, so I will allow 10 minutes for students to play one game and rotate positions – 30 minutes total.</li> <li>• I will need to model this game for students using a projection device, before they play. I will only play a partial game, because I want the students to experience the game themselves to figure out the winning strategies, instead of watching me employ the strategies.</li> <li>• A player cannot pick a number that does not have any factors left on the board – will lose a turn. This will factor into strategy. They have to pick a number, not only with factors (composite), but also with a factor left on the board.</li> <li>• Factors can't be picked more than once.</li> </ul>
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## Part 6 – Consider the bigger picture

Describe how this learning activity fits within a lesson or unit plan to meet objectives that will be assessed.

NOTE: Information about additional learning activities or materials that will be used to complement this learning activity may be included.

Prior to this learning activity, students will first receive instruction on the concept of multiplication and factoring. They will use Base-10 blocks to build models of multiplication, and draw arrays using graph paper. After students understand this concept, the Factor Game will help them practice factoring and committing multiplication facts to memory. After the initial whole-class lesson using this game, and discussing strategy, I will encourage them to practice multiplication tables and factoring at school and at home, and give them additional opportunities to play the game to help them apply their skills.